

AD836209

TRANSLATION NO. 1269

DATE: 6 Jan 1964

[REDACTED]

[REDACTED]

JUL 20 1968

DEPARTMENT OF THE ARMY
Fort Detrick
Frederick, Maryland

FURTHER REPORTS ON THE DISTRIBUTION OF NITROGEN-CONTAINING
MATERIALS IN THE BLOOD

Zeitschrift für klinische Medizin
(Journal of Clinical Medicine),
Vol. 50, Nos. 3 and 4, 1903,
pages 167-168, 216-234, 252.

Professor Dr. R. v. Jaksch

In my first report ([Note]: See Jaksch, Zeitschrift für klinische Medizin, Vol. 47, 1902, page 1) on the same subject, I called to one's attention in the conclusion that first, the Schöndorff method of urea determination gave adequate results even with less than 10 g phosphoric acid, and second, the values which I presented in this series of observations may have been too low for urea and too high for amino acid nitrogen because the total urea was not converted into ammonium phosphate due to the use of an insufficient quantity of phosphoric acid.

I will treat this question in the following observations.

Note that the method is exactly the same as that which I have already fully described previously. This time, also, on the grounds presented formerly, I deemed it necessary to present each experiment individually.

The material I have worked up for this purpose includes:

I. Kidney affections.....	15 cases with 16 investigations
II. Liver diseases.....	2 cases with 2 investigations
III. Anemia.....	4 cases with 4 investigations
IV. Diabetes mellitus.....	3 cases with 8 investigations
V. Lobular pneumonia.....	1 case with 2 investigations
VI. Morbus Basedowii.....	1 case with 1 investigation
VII. Erysipelas.....	1 case with 1 investigation
VIII. Typhus abdominalis.....	4 cases with 4 investigations
IX. Mild rheumatism of the joints.....	1 case with 6 investigations

In addition, four experiments with normal human urine with and without the addition of hippuric acid were carried out, an experiment with horse urine and an experiment in one case on mild phosphorous poisoning. I note in addition that since the conclusion of my first series of observations, a report by M. Krüger and J. Schmid ([Note]: Krüger and Schmid, Zeitschrift für physiologische Chemie (Journal of Physiological Chemistry), Volume 31, 1900-1901, page 356) has come to my attention which is also concerned with the detection of amino acid nitrogen in urine.

My observation material now follows.

V. Lobular Pneumonia

Case XXV.

Thirty-first experiment on 7-8 December.

In the following case the patient was severely comatose when brought in; traces of sugar and albumen were found in the urine; in addition there was a high fever and signs of a lung affection. A lobular pneumonia was found in the left lung on dissection and also an abscess in the same lung; bacteriological investigation pointed to the presence of *diplococcus lanceolatus*.

The urine contained sugar and albumen; both substances were present in small concentrations, however, so that determining the sugar quantitatively with the polarimeter gave no result.

The experiment with native acid urine was carried out first; of course, I lacked a 24 hour-quantity of urine in this case since the urine could not be accurately collected because of the short duration of observation and the severe coma. The same experiment was then carried out with fermented urine. I first carried out the experiment on unfermented urine.

The density was 1.022. The albumen nitrogen content of the urine in 100 cc, determined in the usual way, amounted to 0.0035 g in 100 cc, 0.000175 g in 5 cc; on the average 1 cc of the acid present was used: 0.9 cc in the first experiment, 1.1 cc in the second experiment.

Five cc of urine were subjected to the Kjeldahl nitrogen determination; 17.1 cc of the acid present were used. The control experiment was inaccurate.

Five cc urine contained 0.05985 g nitrogen.

One hundred cc urine contained 1.19700 g nitrogen.

From 5 cc urine, 19.2 cc phosphotungstic hydrochloric acid precipitated the total material precipitable by this reagent. The residue from 5 cc urine used, on the average, 0.75 cc of the acid present: 0.8 cc in the first experiment, 0.7 cc in the second experiment.

The residue from 5 cc urine contained 0.002625 g nitrogen.
The residue from 100 cc urine contained 0.052500 g nitrogen.

There were 0.000175 g of albumen nitrogen in 5 cc urine (see above);
50 cc + 242 cc phosphotungstic acid produced a filtrate of 225 cc which increased in volume to 230 cc after the addition of lime; 230 cc filtrate correspond to 46.487603 cc urine, 20 cc filtrate to 4.042400 cc.

Twenty cc filtrate, treated by Schöndorff's method, consumed these quantities of the sulphuric acid present each time: using

10 g phosphoric acid, 12.15 cc acid on the average were used:
12.1 cc in the first experiment, 12.2 in the second experiment;
5 g phosphoric acid, 12.2 cc acid on the average were used:
12.2 cc in the first experiment, 12.2 in the second experiment;
3 g phosphoric acid, 12.2 cc acid on the average were used:
12.2 in the first experiment, 12.2 in the second experiment.

The results were identical whether 10 or 3 g phosphoric acid were used; 12.2 cc will be taken as a basis for further calculations because this number reappeared in four analyses. The liquid remained blue. Twenty cc filtrate equal to 4.04240 cc urine contained 0.04270 g urea nitrogen.

In 5 cc urine there were 0.052815 g urea nitrogen = 0.113183 g urea.
In 100 cc urine there were 1.056303 g urea nitrogen = 2.263657 g urea.

Twenty cc of the filtrate equal to 4.04240 cc of urine were analyzed each time by the Kjeldahl method. An average of 12.75 cc of the acid present was used, 12.7 cc in the first experiment, 12.8 cc in the second experiment. Twenty cc filtrate = 4.024 cc urine contained 0.044625 g nitrogen.

Filtrate II from 5 cc urine contained 0.055196 g nitrogen.
Filtrate II from 100 cc urine contained 0.103923 g nitrogen.

Of the total nitrogen, 88.245614% existed as urea, and 95.686281% existed as urea.

Five cc urine contained 0.05985 g nitrogen; the residue + filtrate II contained 0.057821 g, a difference of 0.002029 g. Of the 0.05985 g nitrogen in 5 cc urine, the albumen contained 0.000175 g nitrogen, the purine materials, ammonia, etc. contained 0.002450 g nitrogen, the urea 0.52815 g nitrogen and the amino acids 0.002381 g nitrogen.

Of the total nitrogen of 0.05985 g in 5 cc urine, nitrogen in the residue contributed 4.385964%.

The albumen contained.....0.292397%)
 The rest of the material)
 precipitable by phospho-) = 4.385964%
 tungstic acid contained.....4.093567%)

The nitrogen contained in the urea was.....88.245614%.
 The nitrogen contained in the amino acids was....3.978279%.
 The sum is 96.609857% and the missing 3.390143% indicates the experimental error.

Thirty-second experiment.

The experiment with the fermented urine which stood in an incubator for 48 hours at 40° gave the following results. It is first noted that the nitrogen content of the yeast amounted to 1.74% on the average: 1.74251% in the first experiment, 1.74656% in the second experiment, therefore agreeing with values presented on page 213.

Five cc urine were treated each time by the Kjeldahl method. On the average, 16.5 cc of the acid present were used: 16.4 cc in the first experiment, 16.6 cc in the second experiment.

Five cc urine contained 0.05775 g nitrogen.
 One hundred cc urine contained 1.15500 g nitrogen.

The total substance precipitable from 5 cc urine by phosphotungstic hydrochloric acid was precipitated by 19.2 cc of this reagent.

The residue from 5 cc was digested in the usual way, using an average of 1.05 cc of the acid present: 1 cc in the first experiment, 1.1 cc in the second experiment.

The residue from 5 cc urine contained 0.003675 g nitrogen.
 The residue from 100 cc urine contained 0.73500 g nitrogen.

Fifty cc urine + 242 cc phosphotungstic hydrochloric acid produced a filtrate of 210 cc which increased to a volume of 215 cc on the addition of lime; 215 cc filtrate corresponded to 43.288429 cc urine, 20 cc to 4.036132 cc urine. The filtrate was colorless.

Twenty cc filtrate, treated by Schöndorff's method, consumed these quantities of the acid present each time: using

10 g phosphoric acid, 12.05 cc of acid on the average were used:
 11.9 cc in the first experiment, 12.2 cc in the second experiment;
 5 g phosphoric acid, 12.05 cc of acid on the average were used:
 12.1 cc in the first experiment, 12.1 cc in the second experiment;
 3 g phosphoric acid, 12.00 cc of acid on the average were used:
 12.0 cc in the first experiment, --- in the second experiment.

Therefore, identical results were obtained with 10, 5, 3 g phosphoric acid and the value of 12.05 cc was taken as a basis for further calculations. Twenty cc filtrate corresponding to 4.036132 cc urine, contained 0.042175 g urea nitrogen.

Five cc urine contained 0.052246 g urea nitrogen = 0.111963178 g urea.

One hundred cc urine contained 1.044936 g urea nitrogen = 2.239297848 g urea.

Twenty cc filtrate II were treated each time by the Kjeldahl method, and one experiment was lost. In the second experiment, which was not perfect, 11.6 cc of the acid present were used; 20 cc of filtrate II = 4.036132 cc urine contained 0.04060 g nitrogen.

Filtrate II from 5 cc urine contained 0.050295 g nitrogen.

Filtrate II from 100 cc urine contained 1.00590 g nitrogen.

Of the total nitrogen not precipitable by phosphotungstic acid, 90.469264% existed as urea. The actual value obtained, 103.879113% is qualified by an experimental error in the Kjeldahl determination of nitrogen in filtrate II.

Five cc of urine contained 0.05775 g nitrogen; filtrate II + the residue contained 0.055921 g, a difference of 0.001829 g. Of the 0.05775 g nitrogen in 5 cc urine, the residue contained 0.003675 g nitrogen, the urea 0.052246 g nitrogen, the amino acids a negative value of -0.002246 g nitrogen which is due to experimental error.

Of the total nitrogen of 0.05775 g in 5 cc urine
the residue contained.....6.363636%,
the urea contained.....90.469264%,
a total of 96.83290%, and the missing 3.1671% indicates the experimental error.

Although this experiment is not entirely satisfactory because of the errors made in the Kjeldahl determination of nitrogen in filtrate II, I have mentioned it here because it shows that even a minimum quantity of sugar in the urine serves to influence the Schönborff urea determination in the sense that less urea and correspondingly more amino acid nitrogen was found. However, the error here is not in the amount of phosphoric acid available for use since the same values for the urea nitrogen were found with 3 g phosphoric acid as with 10 g phosphoric acid. I believe that in this case the anomalous result was caused by the presence of phosphotungstic acid salts in the filtrate -- the filtrate was blue -- and therefore caused by the presence of phosphotungstic acid in the filtrate as well as by the fact that the sugar formed compounds with phosphoric acid. The Schönborff method for urea determination in diabetic urine gives consistent results only after the removal of the sugar from the urine by fermentation. This experiment also shows, as do those preceding, that the total nitrogen in fermented urine decreases

and the residue nitrogen increases for the reasons already stated. However, the experiment indicates that we have in phosphotungstic acid a sensitive reagent for detecting sugar in the urine. I am now concerned with the elaboration of a method for the detection of sugar which arises out of this experiment, and Dr. Otori of my clinic will shortly publish a complete report concerning this.

In reference to the method for urea detection in sugar-containing urine by means of Schöndorff's method, these experiments have shown:

1. Removing the phosphotungstic acid from the filtrate is not successful, even if the urine contains only traces of sugar, perhaps because of the dissolving action of the sugar on the calcium phosphotungstate. Only a very large excess of lime precipitates the calcium phosphotungstate along with the sugar. How far the Schöndorff determination of urea is influenced by sugar in the urine will be shown shortly by the experiments of Otori.
2. The sugar forms compounds with the phosphoric acid so that a part of the urea escapes conversion into ammonium phosphate during the Schöndorff method. Ten g of phosphoric acid, as prescribed by Schöndorff (see experiments 28 and 29), are insufficient for total conversion, but 20 to 30 g are sufficient.
3. Even using 20-30 g phosphoric acid (see experiment 29), the quantity of urea nitrogen seems to be too small and that of the amino acid nitrogen too large because of the presence of phosphotungstic acid in the filtrate.
4. Therefore, of the previously mentioned methods, we chose the removal of sugar from the urine by fermentation. For, although the percent composition changes by the loss of total nitrogen (see experiments 29 and 32), and an increase of residue nitrogen by the formation of ammonium salts, the absolute values obtained for the urea and amino acid nitrogen are closest to the actual proportions.

I will therefore take these values which were obtained with fermented urine as the sole basis for my considerations on the distribution of nitrogen in the urine. The high percental values and absolute numbers which I presented in experiments 23, 24 and 25, 26 and also 28 for the amino acids originate from the above mentioned errors caused by the use of the Schöndorff method for urea determination on diabetic urine.

If we examine the results obtained from this point of view, only experiments 27 and 29 are valuable for our purpose; they show that the amino acid nitrogen amounts to 3.35-3.86% of the total nitrogen; the absolute value was 0.63-0.64 g, giving an average value of 0.64 g, which amounts to 8.16 g hippuric acid. The urea was distributed from 79.30-88.35% in the nitrogen secretion. Its quantity amounted to 27.83-36.37 g; the residue nitrogen fluctuated between 3.14-13.08%. Experiment 30 is not suitable for this

purpose since decomposed urine was used. This experiment shows that the secretion of nitrogen in the form of urea plays the most important role even in diabetes. It should not be denied that in these experiments the highest values were obtained for the amino acids, and further some very high values were even obtained for the residue nitrogen -- I am omitting the unsatisfactory experiment 30. Therefore, further experiments should be carried out on the urine of diabetics in order to answer these questions completely and conclusively.

VII. Erysipelas

Case XXVI.

Thirty-fourth experiment from 22-23 January 1903.

Erysipelas. Temperature between 39.7-40.0° C. Urine quantity 460 cc, density 1.017, no albumen, acid reaction.

Five cc urine were treated each time by the Kjeldahl method; one experiment is inaccurate; 38 cc of the normal sulphuric acid present were used in the second experiment.

In 5 cc urine there were 0.13300 g nitrogen.
In 100 cc urine there were 2.6600 g nitrogen.
In 460 cc urine there were 12.236 g nitrogen.

Eighteen cc of phosphotungstic hydrochloric acid precipitated the total substance from 5 cc urine precipitable by this reagent. The residue from 5 cc urine was digested in the usual way and used on an average 2.25 cc of the acid present: 2.3 cc in the first experiment, 2.2 cc in the second experiment.

The residue from 5 cc urine contained 0.007875 g nitrogen.
The residue from 100 cc urine contained 0.157500 g nitrogen.
The residue from 460 cc urine contained 0.724500 g nitrogen.

Fifty cc urine + 180 cc phosphotungstic hydrochloric acid produced a filtrate of 195 cc which increased to a volume of 200 cc after the addition of lime; 200 cc filtrate corresponded to 42.39130 cc urine, 20 cc to 4.239130 cc.

Twenty cc of the filtrate were treated each time by the Schönborff method, consuming 30.1 cc of the acid present when 10 g phosphoric acid were used; the control determination, such as the determinations with 3 and 5 g phosphoric acid, gave inaccurate results due to experimental error and were not used for this reason. Twenty cc filtrate = 4.239130 cc urine contained 0.10535 g urea nitrogen.

In 5 cc urine there were 0.12419 g urea nitrogen = 0.2662849 g urea.

In 100 cc urine there were 2.48318 g urea nitrogen = 5.325739 g urea.

In 460 cc urine there were 11.436544 g urea nitrogen = 24.508514 g urea.

Twenty cc filtrate = 4.239130 cc were treated each time by the Kjeldahl method; on an average 30.4 cc of the acid present were used: 30.3 cc in the first experiment, 30.5 cc in the second experiment. Twenty cc filtrate treated according to Kjeldahl contained 0.106400 g nitrogen.

Filtrate II from 5 cc urine contained 0.125497 g nitrogen.

Filtrate II from 100 cc urine contained 2.509948 g nitrogen.

Filtrate II from 460 cc urine contained 11.545765 g nitrogen.

Of the nitrogen not precipitable by phosphotungstic acid, 99.013522% existed as urea, and 93.427819% of the total nitrogen existed as urea.

In 5 cc urine there are 0.13300 g nitrogen, in the residue + filtrate II there are 0.13372 g nitrogen, a difference of +0.00372 g. Of the total nitrogen of 0.133000 g in 5 cc urine, the residue nitrogen is 0.007875 g, the urea nitrogen is 0.1214159 g, the amino acid nitrogen is 0.001238 g.

Of the total nitrogen of 0.13300 g in 5 cc urine

the residue nitrogen comprises..... 5.921052%

the urea nitrogen comprises.....93.427819%

the amino acid nitrogen comprises..... 0.930827%.

The total is 100.279698% and the additional 0.279698% indicates the experimental error.

This experiment shows that an increase of amino acid nitrogen cannot be demonstrated; even the quantity of residue nitrogen fluctuated inside the known limits. The chief nitrogen-containing constituent of urine is urea with 93.43%. Urea secretion is proportional to total nitrogen secretion; indeed, 24.51 g urea and correspondingly 12.24 g total nitrogen were found. The amount of total nitrogen is multiplied by two (see page 198) to give the quantity of urea in whole numbers.

Case XXVII.

Thirty-fifth experiment on 29-30 December 1902.

Typhus abdominalis, in the third week of illness, temperature between 38.3-38.7° C. Urine quantity 575 cc, density 1.032, acid reaction.

Five cc of the urine were treated each time by the Kjeldahl method; one experiment was inaccurate and is omitted. In the other experiment, 34.3 cc of the 0.25 N sulphuric acid present were used for the neutralization of the ammonia evolved.

In 5 cc urine there were 0.12005 g nitrogen.
In 100 cc urine there were 2.40100 g nitrogen.
In 575 cc urine there were 13.80575 g nitrogen.

The total material precipitable from 5 cc urine by phosphotungstic hydrochloric acid was precipitated by 19.6 cc of this reagent. The residue from 5 cc urine was treated in the usual way and used 2 cc of the 0.25 N sulphuric acid present in both experiments.

The residue from 5 cc urine contained 0.00700 g nitrogen.
The residue from 100 cc urine contained 0.01400 g nitrogen.
The residue from 575 cc urine contained 0.80500 g nitrogen.

Fifty cc urine + 246 cc phosphotungstic hydrochloric acid produced a filtrate of 220 cc which increased in volume to 225 cc on the addition of lime; 225 cc filtrate correspond to 44.715447 cc urine, 20 cc to 3.974706 cc urine.

Twenty cc filtrate, treated by Schöndorff's method, consumed these quantities of the acid present each time: using

10 g phosphoric acid, 24.8 cc of acid on the average were used:
24.8 cc in the first experiment, 24.8 cc in the second experiment;
5 g phosphoric acid, 24.65 cc of acid on the average were used:
24.6 cc in the first experiment, 24.7 cc in the second experiment;
3 g phosphoric acid, 24.3 cc of the acid on the average were used:
24.4 cc in the first experiment, 24.2 cc in the second experiment.

The number 24.8 was taken as the basis for further calculations.

Twenty cc of Filtrate II were treated each time by the Kjeldahl method; on the average 25.55 cc of the acid present were used: 25.5 cc in the first experiment, 25.6 cc in the second experiment.

According to the Kjeldahl analysis, 20 cc filtrate II = 3.974706 cc urine contained 0.089425 g nitrogen.

Filtrate II from 5 cc urine contained 0.112492 g nitrogen.
Filtrate II from 100 cc urine contained 2.249851 g nitrogen.
Filtrate II from 575 cc urine contained 12.939164 g nitrogen.

Of the nitrogen not precipitable by phosphotungstic acid, 97.06468% existed as urea; of the total nitrogen, 90.953769% existed as urea.

Five cc urine contained 0.12005 g nitrogen; in the residue + filtrate II there were 0.119492 g nitrogen, a difference of -0.000558 g. Of the nitrogen content of 0.12005 g in 5 cc urine, the residue nitrogen amounted to 0.007 g, the urea nitrogen amounted to 0.109190 g and the amino acid nitrogen amounted to 0.003302 g.

Of the total nitrogen of 0.12005 g in 5 cc urine,
the residue contained..... 5.830903%
the urea contained.....90.953769%
the amino acids contained..... 2.750520%.
The total is 99.535192% and the missing 0.464808% indicates the experimental error.

Case XXVIII.

Thirty-sixth experiment on 30-31 December 1902.

Typhus abdominalis, in the fourth week of illness, temperature between 37.2-39.1° C. Urine quantity 1108 cc, density 1.025, acid reaction.

Five cc urine were treated each time by the Kjeldahl method. An average of 23.55 cc of the 0.25 N sulphuric acid present was used: 23.5 cc in the first experiment, 23.6 cc in the second experiment.

In 5 cc urine there were 0.082425 g nitrogen.
In 100 cc urine there were 1.648500 g nitrogen.
In 1108 cc urine there were 18.265380 g nitrogen.

The total material precipitable from 5 cc urine by phosphotungstic hydrochloric acid was precipitated by 22.5 cc of this reagent. The residue from 5 cc urine was treated in the usual way, using 2.2 cc of the acid present, in both experiments.

The residue from 5 cc urine contained 0.00770 g nitrogen.
The residue from 100 cc urine contained 0.15400 g nitrogen.
The residue from 1108 cc urine contained 1.706320 g nitrogen.

Fifty cc urine + 225 cc phosphotungstic hydrochloric acid produced a filtrate of 250 cc which increased to a volume of 255 cc on the addition of lime; 255 cc filtrate correspond to 45.454545 cc urine, 20 cc filtrate to 3.565062 cc urine.

Twenty cc filtrate, treated by the Schönbein method, consumed these quantities of the acid present each time: using

10 g phosphoric acid, on the average 14.3 cc acid were used:
14.3 cc in the first experiment, 14.3 in the second experiment;
5 g phosphoric acid, on the average 14.3 cc acid were used:
14.3 cc in the first experiment, 14.3 cc in the second experiment;
3 g phosphoric acid, on the average 14.3 cc acid were used:
14.3 cc in the first experiment, 14.3 cc in the second experiment.

Absolutely identical results were obtained in all experiments.

Twenty cc filtrate, corresponding to 3.565062 cc urine contained 0.050050 g urea nitrogen.

In 5 cc urine there were 0.070195 g urea nitrogen = 0.150427885 g urea.
In 100 cc urine there were 1.4039 g urea nitrogen = 3.0085577 g urea.
In 1108 cc urine there were 15.555241 g urea nitrogen = 33.334881463 g urea.

Twenty cc filtrate = 3.565062 cc urine were treated each time by the Kjeldahl method; 14.6 cc of the acid present were used up in both experiments. Twenty cc filtrate II = 3.565062 cc urine, treated by the Kjeldahl method, contained 0.05110 g nitrogen.

Filtrate II from 5 cc urine contained 0.071667 g nitrogen.
Filtrate II from 100 cc urine contained 1.433355 g nitrogen.
Filtrate II from 1108 cc urine contained 15.881575 g nitrogen.

Of the nitrogen not precipitable by the phosphotungstic hydrochloric acid, 97.940474% existed as urea, while 85.157415% of the total nitrogen existed as urea.

Five cc urine contained 0.082425 g nitrogen, the residue + filtrate II contained 0.079367 g nitrogen, a difference of -0.003058 g. Of the total nitrogen of 0.082425 g in 5 cc urine, the residue contained 0.0077 g nitrogen, the urea contained 0.070191 g nitrogen, and the amino acids contained 0.000976 g nitrogen.

Of the total nitrogen of 0.082425 g in 5 cc urine,
the residue contained..... 9.341838%
the urea contained.....85.157415%
the amino acids contained..... 1.184106%.
The sum is 97.940974% and the missing 4.31641% indicates the experimental error.

Case XXIX.

Thirty-seventh experiment on 4-5 January 1903.

Typhus abdominalis, in the second week of illness, temperature between 37.6-39.1° C. Urine quantity 530 cc (approximately), density 1.032, acid reaction, no albumen.

Five cc urine were treated each time by the Kjeldahl method. On the average, 36.85 cc of the normal sulphuric acid present were used: 36.7 cc in the first experiment, 37 cc in the second experiment.

In 5 cc urine there were 0.128975 g nitrogen.
In 100 cc urine there were 2.579500 g nitrogen.
In 530(?) cc urine there were 13.671350(?) g nitrogen.

The total material precipitable from 5 cc urine by phosphotungstic hydrochloric acid was precipitated by 24.5 cc of this reagent. The residue

from 5 cc urine treated in the usual way consumed an average of 2.2 cc of the acid present: 2 cc in the first experiment, 2.4 cc in the second experiment.

The residue from 5 cc urine contained 0.0077 g nitrogen.

The residue from 100 cc urine contained 0.1540 g nitrogen.

The residue from 530(?) cc urine contained 0.8162(?) g nitrogen.

Fifty cc urine + 245 cc phosphotungstic hydrochloric acid produced a filtrate of 270 cc which increased in volume to 275 cc on the addition of lime; 275 cc filtrate correspond to 45.762711 cc urine, 20 cc filtrate to 3.328197 cc urine.

Twenty cc filtrate, treated by the Schönborff method, consumed these quantities of the acid present each time: using

10 g phosphoric acid, on the average 22.8 cc acid were used:

22.8 cc in the first experiment, 22.8 cc in the second experiment;

5 g phosphoric acid, on the average 22.8 cc acid were used:

22.8 cc in the first experiment, 22.8 cc in the second experiment;

3 g phosphoric acid, on an average, 22.35 cc acid were used:

22.4 cc in the first experiment, 22.3 cc in the second experiment.

Using 10 and 5 g of phosphoric acid gave identical results while using 3 g gave smaller numbers. The number 22.8 cc was taken as the basis for further calculations. Twenty cc filtrate corresponding to 3.328197 cc urine contained 0.081725 g urea nitrogen.

In 5 cc urine there were 0.119884 g urea nitrogen = 0.256911412 g urea.

In 100 cc urine there were 2.397694 g urea nitrogen = 5.138258242 g urea.

In 575(?) cc urine there were 12.707781(?) g urea nitrogen = 27.232774683(?) g urea.

Twenty cc filtrate II = 3.328197 cc urine were treated each time by the Kjeldahl method; an average of 23.35 cc of the 0.25 N sulphuric acid present were used: 23.4 cc in the first experiment, 23.3 cc in the second experiment. Twenty cc filtrate II = 3.328197 cc urine, investigated by the Kjeldahl method, contained 0.081725 g nitrogen.

Filtrate II from 5 cc urine contained 0.122776 g nitrogen.

Filtrate II from 100 cc urine contained 2.455533 g nitrogen.

Filtrate II from 575(?) cc urine contained 13.014328(?) g nitrogen.

Of the nitrogen not precipitable by the phosphotungstic hydrochloric acid, 97.644490% existed as urea; 92.95134% of the total nitrogen existed as urea.

Five cc urine contained 0.128975 g nitrogen; the residue + filtrate

II from 5 cc urine contained 0.130476 g nitrogen. The difference is +0.001511 g. Of the 0.128975 g nitrogen in 5 cc urine, the residue contained 0.0077 g nitrogen, the urea 0.119884 g nitrogen, the amino acids 0.002892 g nitrogen.

Of the total nitrogen of 0.128975 g in 5 cc urine
the residue contained..... 5.970149%
the urea contained.....92.951347%
the amino acids contained..... 2.242372%.

The total is 101.163868% and the additional 1.163868% indicates the experimental error.

Case XXX.

Thirty-eighth experiment on 4-5 January, 1903.

Typhus abdominalis in the second of illness. Temperature between 38-39.1° C.

Urine quantity 820 cc, density 1.030, acid, no albumen.

Five cc urine were treated by the Kjeldahl method each time; one experiment was inaccurate. In the second experiment 35.3 cc of the 0.25 N sulphuric acid present was used.

In 5 cc urine there were 0.12355 g nitrogen.
In 100 cc urine there were 2.47100 g nitrogen.
In 820 cc urine there were 20.26220 g nitrogen.

The total material precipitable by phosphotungstic hydrochloric acid was precipitated from 5 cc urine by 23.8 cc of this reagent. The residue from 5 cc urine, treated in the usual way, used an average of 2.1 cc of the sulphuric acid present: 2 cc in the first experiment, 2.2 cc in the second experiment.

The residue from 5 cc urine contained 0.00735 g nitrogen.
The residue from 100 cc urine contained 0.14700 g nitrogen.
The residue from 820 cc urine contained 1.20540 g nitrogen.

Fifty cc urine + 238 cc phosphotungstic hydrochloric acid produced a filtrate of 260 cc which increased in volume to 265 cc on the addition of lime; 265 cc filtrate correspond to 45.138888 cc urine, 20 cc filtrate to 3.406708 cc urine.

Twenty cc filtrate, treated by the Schönorff method, consumed these quantities of the acid present each time: using

10 g phosphoric acid, 22.9 cc of acid were used on an average:
22.9 cc in the first experiment, 22.9 cc in the second experiment;

5 g phosphoric acid, 22.85 cc of acid were used on an average:
22.9 cc in the first experiment, 22.8 cc in the second experiment;
3 g phosphoric acid, 22.35 cc of acid were used on an average:
22.1 cc in the first experiment, 22.6 cc in the second experiment.

The number 22.9 cc was taken as a basis for further calculations; identical results were obtained with 10 and 5 g phosphoric acid and smaller values with 3 g.

Twenty cc filtrate = 3.40678 cc urine contained 0.06015 g urea nitrogen.

In 5 cc urine there were 0.117685 g urea nitrogen = 0.252091805 g urea.
In 100 cc urine there were 2.352711 g urea nitrogen = 5.041860 g urea.
In 820 cc urine there were 19.292231 g urea nitrogen = 41.342510 g urea.

Twenty cc filtrate = 3.406708 cc urine were treated each time by the Kjeldahl method. In both experiments 23.5 cc of the acid present were used. Twenty cc filtrate II = 3.406708 cc urine, treated by the Kjeldahl method, contained 0.08225 g nitrogen.

Filtrate II from 5 cc urine contained 0.120717 g nitrogen.
Filtrate II from 100 cc urine contained 2.414354 g nitrogen.
Filtrate II from 820 cc urine contained 19.797704 g nitrogen.

Of the nitrogen not precipitable by phosphotungstic hydrochloric acid, 97.446921% existed as urea; 95.212464% of the total nitrogen existed as urea.

Five cc urine contained 0.12355 g nitrogen, the residue + filtrate II contained 0.128067 g nitrogen. The difference is +0.004517 g. Of the 0.12355 g nitrogen in 5 cc urine, the residue contained 0.00735 g, the urea contained 0.115874 g, the amino acids contained 0.003082 g.

Of the total nitrogen of 0.12355 g in 5 cc urine
the residue contained..... 5.949008%
the urea contained.....95.212464%
the amino acids contained..... 2.494536%.
The total is 103.656008% and the additional 3.656008% indicates the experimental error.

These results were obtained from the investigation of these four cases of typhus abdominalis.

The amino acid nitrogen was distributed between 1.18-2.49% in the total nitrogen secretion. The absolute values for the secretion of amino acid nitrogen in the 24 hour quantity of urine of the sick fluctuated between 0.22-0.51 g, 0.3670 g on the average. This quantity corresponded to the average of 4.9023 g hippuric acid in the daily quantity of urine.

Therefore, a moderate increase of the amino acid nitrogen was also found here, while in the first series of observations ([Note]: see R. v. Jaksch, loc. cit., p. 61), the numbers for the amino acid nitrogen were too large due to the use of too little phosphoric acid in the Schöndorff determination of urea. In the case of typhus, this error is all the more perceptible because of the higher urea content of the urine. As Table VI shows, the 3 g of phosphoric acid in experiments 38 and 39 did not suffice to convert all the urea present into ammonium phosphate, whereas in all the other experiments, with the exception of those with diabetic urine (see Table I and VI), even this 3 g quantity sufficed.

As for the urea, it is distributed in the total nitrogen secretion on the order of 85.16-95.21%, an average of 91.07% from four experiments. The absolute quantity of urea in a 24 hour quantity of urine amounts to 26.91-41.34 g. It is proportional to the total nitrogen secretion which amounts to 12.6-19.29 g. Multiplying this by two gives the approximate quantity of urea in whole numbers.

The chief product of nitrogen conversion during typhus is uroa. Of course, almost the highest values for the absolute quantity of amino acid nitrogen in the daily quantity of urine were obtained here, 0.51 g in one case. Actually, therefore, an increase of amino acid nitrogen takes place during typhus.

Finally, as for the residue nitrogen which we related to the presence of purine materials and ammonia in the urine, the values fluctuate between 5.83-9.34%, an average of 6.77%. Therefore, these values do not depart from the values obtained for other illnesses. Thus, these materials do not play an essential role in the metabolism of typhoid. The metabolism of the typhoid is analogous to that of every fever illness: it causes the indications of increased formation and secretion of urea besides a slight increase of amino acid nitrogen.

The observations discussed here are compiled in the following tables.

Table V

[illegible]

IV. Diabetes mellitus

	1920 Lohn- entzug	1913 Lohn- entzug	1907 Lohn- entzug	1900 Lohn- entzug	1893 Lohn- entzug	1886 Lohn- entzug	1879 Lohn- entzug	1872 Lohn- entzug	1865 Lohn- entzug	1858 Lohn- entzug	1851 Lohn- entzug	1844 Lohn- entzug	1837 Lohn- entzug	1830 Lohn- entzug	1823 Lohn- entzug	1816 Lohn- entzug	1809 Lohn- entzug	1802 Lohn- entzug	1795 Lohn- entzug	1788 Lohn- entzug	1781 Lohn- entzug	1774 Lohn- entzug	1767 Lohn- entzug	1760 Lohn- entzug	1753 Lohn- entzug	1746 Lohn- entzug	1739 Lohn- entzug	1732 Lohn- entzug	1725 Lohn- entzug	1718 Lohn- entzug	1711 Lohn- entzug	1704 Lohn- entzug	1697 Lohn- entzug	1690 Lohn- entzug	1683 Lohn- entzug	1676 Lohn- entzug	1669 Lohn- entzug	1662 Lohn- entzug	1655 Lohn- entzug	1648 Lohn- entzug	1641 Lohn- entzug	1634 Lohn- entzug	1627 Lohn- entzug	1620 Lohn- entzug	1613 Lohn- entzug	1606 Lohn- entzug	1599 Lohn- entzug	1592 Lohn- entzug	1585 Lohn- entzug	1578 Lohn- entzug	1571 Lohn- entzug	1564 Lohn- entzug	1557 Lohn- entzug	1550 Lohn- entzug	1543 Lohn- entzug	1536 Lohn- entzug	1529 Lohn- entzug	1522 Lohn- entzug	1515 Lohn- entzug	1508 Lohn- entzug	1501 Lohn- entzug	1494 Lohn- entzug	1487 Lohn- entzug	1480 Lohn- entzug	1473 Lohn- entzug	1466 Lohn- entzug	1459 Lohn- entzug	1452 Lohn- entzug	1445 Lohn- entzug	1438 Lohn- entzug	1431 Lohn- entzug	1424 Lohn- entzug	1417 Lohn- entzug	1410 Lohn- entzug	1403 Lohn- entzug	1396 Lohn- entzug	1389 Lohn- entzug	1382 Lohn- entzug	1375 Lohn- entzug	1368 Lohn- entzug	1361 Lohn- entzug	1354 Lohn- entzug	1347 Lohn- entzug	1340 Lohn- entzug	1333 Lohn- entzug	1326 Lohn- entzug	1319 Lohn- entzug	1312 Lohn- entzug	1305 Lohn- entzug	1298 Lohn- entzug	1291 Lohn- entzug	1284 Lohn- entzug	1277 Lohn- entzug	1270 Lohn- entzug	1263 Lohn- entzug	1256 Lohn- entzug	1249 Lohn- entzug	1242 Lohn- entzug	1235 Lohn- entzug	1228 Lohn- entzug	1221 Lohn- entzug	1214 Lohn- entzug	1207 Lohn- entzug	1200 Lohn- entzug	1193 Lohn- entzug	1186 Lohn- entzug	1179 Lohn- entzug	1172 Lohn- entzug	1165 Lohn- entzug	1158 Lohn- entzug	1151 Lohn- entzug	1144 Lohn- entzug	1137 Lohn- entzug	1130 Lohn- entzug	1123 Lohn- entzug	1116 Lohn- entzug	1109 Lohn- entzug	1102 Lohn- entzug	1095 Lohn- entzug	1088 Lohn- entzug	1081 Lohn- entzug	1074 Lohn- entzug	1067 Lohn- entzug	1060 Lohn- entzug	1053 Lohn- entzug	1046 Lohn- entzug	1039 Lohn- entzug	1032 Lohn- entzug	1025 Lohn- entzug	1018 Lohn- entzug	1011 Lohn- entzug	1004 Lohn- entzug	997 Lohn- entzug	990 Lohn- entzug	983 Lohn- entzug	976 Lohn- entzug	969 Lohn- entzug	962 Lohn- entzug	955 Lohn- entzug	948 Lohn- entzug	941 Lohn- entzug	934 Lohn- entzug	927 Lohn- entzug	920 Lohn- entzug	913 Lohn- entzug	906 Lohn- entzug	899 Lohn- entzug	892 Lohn- entzug	885 Lohn- entzug	878 Lohn- entzug	871 Lohn- entzug	864 Lohn- entzug	857 Lohn- entzug	850 Lohn- entzug	843 Lohn- entzug	836 Lohn- entzug	829 Lohn- entzug	822 Lohn- entzug	815 Lohn- entzug	808 Lohn- entzug	801 Lohn- entzug	794 Lohn- entzug	787 Lohn- entzug	780 Lohn- entzug	773 Lohn- entzug	766 Lohn- entzug	759 Lohn- entzug	752 Lohn- entzug	745 Lohn- entzug	738 Lohn- entzug	731 Lohn- entzug	724 Lohn- entzug	717 Lohn- entzug	710 Lohn- entzug	703 Lohn- entzug	696 Lohn- entzug	689 Lohn- entzug	682 Lohn- entzug	675 Lohn- entzug	668 Lohn- entzug	661 Lohn- entzug	654 Lohn- entzug	647 Lohn- entzug	640 Lohn- entzug	633 Lohn- entzug	626 Lohn- entzug	619 Lohn- entzug	612 Lohn- entzug	605 Lohn- entzug	598 Lohn- entzug	591 Lohn- entzug	584 Lohn- entzug	577 Lohn- entzug	570 Lohn- entzug	563 Lohn- entzug	556 Lohn- entzug	549 Lohn- entzug	542 Lohn- entzug	535 Lohn- entzug	528 Lohn- entzug	521 Lohn- entzug	514 Lohn- entzug	507 Lohn- entzug	500 Lohn- entzug	493 Lohn- entzug	486 Lohn- entzug	479 Lohn- entzug	472 Lohn- entzug	465 Lohn- entzug	458 Lohn- entzug	451 Lohn- entzug	444 Lohn- entzug	437 Lohn- entzug	430 Lohn- entzug	423 Lohn- entzug	416 Lohn- entzug	409 Lohn- entzug	402 Lohn- entzug	395 Lohn- entzug	388
--	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	-----

V. Lobular Pneumonia

[illegible]

VII. Erysipelas

St	XXVI	XXVII	XXVIII	XXIX	XXX	XXXI	XXXII	XXXIII	XXXIV	XXXV	XXXVI	XXXVII	XXXVIII	XXXIX	XL	XL I	XL II	XL III	XL IV	XL V	XL VI	XL VII	XL VIII	XL IX	XL X	XL XI	XL XII	XL XIII	XL XIV	XL XV	XL XVI	XL XVII	XL XVIII	XL XIX	XL XX	XL XXI	XL XXII	XL XXIII	XL XXIV	XL XXV	XL XXVI	XL XXVII	XL XXVIII	XL XXIX	XL XXX	XL XXXI	XL XXXII	XL XXXIII	XL XXXIV	XL XXXV	XL XXXVI	XL XXXVII	XL XXXVIII	XL XXXIX	XL XL	XL XLI	XL XLII	XL XLIII	XL XLIV	XL XLV	XL XLVI	XL XLVII	XL XLVIII	XL XLIX	XL L	XL LI	XL LII	XL LIII	XL LIV	XL LV	XL LVI	XL LVII	XL LVIII	XL LVIX	XL LX	XL LXI	XL LXII	XL LXIII	XL LXIV	XL LXV	XL LXVI	XL LXVII	XL LXVIII	XL LXIX	XL LXX	XL LXXI	XL LXXII	XL LXXIII	XL LXXIV	XL LXXV	XL LXXVI	XL LXXVII	XL LXXVIII	XL LXXIX	XL LXXX	XL LXXXI	XL LXXXII	XL LXXXIII	XL LXXXIV	XL LXXXV	XL LXXXVI	XL LXXXVII	XL LXXXVIII	XL LXXXIX	XL LXXXX	XL LXXXX I	XL LXXXX II	XL LXXXX III	XL LXXXX IV	XL LXXXX V	XL LXXXX VI	XL LXXXX VII	XL LXXXX VIII	XL LXXXX IX	XL LXXXX X	XL LXXXX XI	XL LXXXX XII	XL LXXXX XIII	XL LXXXX XIV	XL LXXXX XV	XL LXXXX XVI	XL LXXXX XVII	XL LXXXX XVIII	XL LXXXX XIX	XL LXXXX XX	XL LXXXX XXI	XL LXXXX XXII	XL LXXXX XXIII	XL LXXXX XXIV	XL LXXXX XXV	XL LXXXX XXVI	XL LXXXX XXVII	XL LXXXX XXVIII	XL LXXXX XXIX	XL LXXXX XXX	XL LXXXX XXXI	XL LXXXX XXXII	XL LXXXX XXXIII	XL LXXXX XXXIV	XL LXXXX XXXV	XL LXXXX XXXVI	XL LXXXX XXXVII	XL LXXXX XXXVIII	XL LXXXX XXXIX	XL LXXXX XL	XL LXXXX XLI	XL LXXXX XLII	XL LXXXX XLIII	XL LXXXX XLIV	XL LXXXX XLV	XL LXXXX XLVI	XL LXXXX XLVII	XL LXXXX XLVIII	XL LXXXX XLIX	XL LXXXX L	XL LXXXX LI	XL LXXXX LII	XL LXXXX LIII	XL LXXXX LIV	XL LXXXX LV	XL LXXXX LVI	XL LXXXX LVII	XL LXXXX LVIII	XL LXXXX LVIX	XL LXXXX LX	XL LXXXX LXI	XL LXXXX LXII	XL LXXXX LXIII	XL LXXXX LXIV	XL LXXXX LXV	XL LXXXX LXVI	XL LXXXX LXVII	XL LXXXX LXVIII	XL LXXXX LXIX	XL LXXXX LXX	XL LXXXX LXXI	XL LXXXX LXXII	XL LXXXX LXXIII	XL LXXXX LXXIV	XL LXXXX LXXV	XL LXXXX LXXVI	XL LXXXX LXXVII	XL LXXXX LXXVIII	XL LXXXX LXXIX	XL LXXXX LXXX	XL LXXXX LXXXI	XL LXXXX LXXXII	XL LXXXX LXXXIII	XL LXXXX LXXXIV	XL LXXXX LXXXV	XL LXXXX LXXXVI	XL LXXXX LXXXVII	XL LXXXX LXXXVIII	XL LXXXX LXXXIX	XL LXXXX LXXXX	XL LXXXX LXXXX I	XL LXXXX LXXXX II	XL LXXXX LXXXX III	XL LXXXX LXXXX IV	XL LXXXX LXXXX V	XL LXXXX LXXXX VI	XL LXXXX LXXXX VII	XL LXXXX LXXXX VIII	XL LXXXX LXXXX IX	XL LXXXX LXXXX X	XL LXXXX LXXXX XI	XL LXXXX LXXXX XII	XL LXXXX LXXXX XIII	XL LXXXX LXXXX XIV	XL LXXXX LXXXX XV	XL LXXXX LXXXX XVI	XL LXXXX LXXXX XVII	XL LXXXX LXXXX XVIII	XL LXXXX LXXXX XIX	XL LXXXX LXXXX XX	XL LXXXX LXXXX XXI	XL LXXXX LXXXX XXII	XL LXXXX LXXXX XXIII	XL LXXXX LXXXX XXIV	XL LXXXX LXXXX XXV	XL LXXXX LXXXX XXVI	XL LXXXX LXXXX XXVII	XL LXXXX LXXXX XXVIII	XL LXXXX LXXXX XXIX	XL LXXXX LXXXX XXX	XL LXXXX LXXXX XXXI	XL LXXXX LXXXX XXXII	XL LXXXX LXXXX XXXIII	XL LXXXX LXXXX XXXIV	XL LXXXX LXXXX XXXV	XL LXXXX LXXXX XXXVI	XL LXXXX LXXXX XXXVII	XL LXXXX LXXXX XXXVIII	XL LXXXX LXXXX XXXIX	XL LXXXX LXXXX XL	XL LXXXX LXXXX XLI	XL LXXXX LXXXX XLII	XL LXXXX LXXXX XLIII	XL LXXXX LXXXX XLIV	XL LXXXX LXXXX XLV	XL LXXXX LXXXX XLVI	XL LXXXX LXXXX XLVII	XL LXXXX LXXXX XLVIII	XL LXXXX LXXXX XLIX	XL LXXXX LXXXX L	XL LXXXX LXXXX LI	XL LXXXX LXXXX LII	XL LXXXX LXXXX LIII	XL LXXXX LXXXX LIV	XL LXXXX LXXXX LV	XL LXXXX LXXXX LVI	XL LXXXX LXXXX LVII	XL LXXXX LXXXX LVIII	XL LXXXX LXXXX LVIX	XL LXXXX LXXXX LX	XL LXXXX LXXXX LXI	XL LXXXX LXXXX LXII	XL LXXXX LXXXX LXIII	XL LXXXX LXXXX LXIV	XL LXXXX LXXXX LXV	XL LXXXX LXXXX LXVI	XL LXXXX LXXXX LXVII	XL LXXXX LXXXX LXVIII	XL LXXXX LXXXX LXIX	XL LXXXX LXXXX LXX	XL LXXXX LXXXX LXXI	XL LXXXX LXXXX LXXII	XL LXXXX LXXXX LXXIII	XL LXXXX LXXXX LXXIV	XL LXXXX LXXXX LXXV	XL LXXXX LXXXX LXXVI	XL LXXXX LXXXX LXXVII	XL LXXXX LXXXX LXXVIII	XL LXXXX LXXXX LXXIX	XL LXXXX LXXXX LXXX	XL LXXXX LXXXX LXXXI	XL LXXXX LXXXX LXXXII	XL LXXXX LXXXX LXXXIII	XL LXXXX LXXXX LXXXIV	XL LXXXX LXXXX LXXXV	XL LXXXX LXXXX LXXXVI	XL LXXXX LXXXX LXXXVII	XL LXXXX LXXXX LXXXVIII	XL LXXXX LXXXX LXXXIX	XL LXXXX LXXXX LXXXX	XL LXXXX LXXXX LXXXX I	XL LXXXX LXXXX LXXXX II	XL LXXXX LXXXX LXXXX III	XL LXXXX LXXXX LXXXX IV	XL LXXXX LXXXX LXXXX V	XL LXXXX LXXXX LXXXX VI	XL LXXXX LXXXX LXXXX VII	XL LXXXX LXXXX LXXXX VIII	XL LXXXX LXXXX LXXXX IX	XL LXXXX LXXXX LXXXX X	XL LXXXX LXXXX LXXXX XI	XL LXXXX LXXXX LXXXX XII	XL LXXXX LXXXX LXXXX XIII	XL LXXXX LXXXX LXXXX XIV	XL LXXXX LXXXX LXXXX XV	XL LXXXX LXXXX LXXXX XVI	XL LXXXX LXXXX LXXXX XVII	XL LXXXX LXXXX LXXXX XVIII	XL LXXXX LXXXX LXXXX XIX	XL LXXXX LXXXX LXXXX XX	XL LXXXX LXXXX LXXXX XXI	XL LXXXX LXXXX LXXXX XXII	XL LXXXX LXXXX LXXXX XXIII	XL LXXXX LXXXX LXXXX XXIV	XL LXXXX LXXXX LXXXX XXV	XL LXXXX LXXXX LXXXX XXVI	XL LXXXX LXXXX LXXXX XXVII	XL LXXXX LXXXX LXXXX XXVIII	XL LXXXX LXXXX LXXXX XXIX	XL LXXXX LXXXX LXXXX XXX	XL LXXXX LXXXX LXXXX XXXI	XL LXXXX LXXXX LXXXX XXXII	XL LXXXX LXXXX LXXXX XXXIII	XL LXXXX LXXXX LXXXX XXXIV	XL LXXXX LXXXX LXXXX XXXV	XL LXXXX LXXXX LXXXX XXXVI	XL LXXXX LXXXX LXXXX XXXVII	XL LXXXX LXXXX LXXXX XXXVIII	XL LXXXX LXXXX LXXXX XXXIX	XL LXXXX LXXXX LXXXX XL	XL LXXXX LXXXX LXXXX XLI	XL LXXXX LXXXX LXXXX XLII	XL LXXXX LXXXX LXXXX XLIII	XL LXXXX LXXXX LXXXX XLIV	XL LXXXX LXXXX LXXXX XLV	XL LXXXX LXXXX LXXXX XLVI	XL LXXXX LXXXX LXXXX XLVII	XL LXXXX LXXXX LXXXX XLVIII	XL LXXXX LXXXX LXXXX XLIX	XL LXXXX LXXXX LXXXX L	XL LXXXX LXXXX LXXXX LI	XL LXXXX LXXXX LXXXX LII	XL LXXXX LXXXX LXXXX LIII	XL LXXXX LXXXX LXXXX LIV	XL LXXXX LXXXX LXXXX LV	XL LXXXX LXXXX LXXXX LVI	XL LXXXX LXXXX LXXXX LVII	XL LXXXX LXXXX LXXXX LVIII	XL LXXXX LXXXX LXXXX LVIX	XL LXXXX LXXXX LXXXX LX	XL LXXXX LXXXX LXXXX LXI	XL LXXXX LXXXX LXXXX LXII	XL LXXXX LXXXX LXXXX LXIII	XL LXXXX LXXXX LXXXX LXIV	XL LXXXX LXXXX LXXXX LXV	XL LXXXX LXXXX LXXXX LXVI	XL LXXXX LXXXX LXXXX LXVII	XL LXXXX LXXXX LXXXX LXVIII	XL LXXXX LXXXX LXXXX LXIX	XL LXXXX LXXXX LXXXX LXX	XL LXXXX LXXXX LXXXX LXXI	XL LXXXX LXXXX LXXXX LXXII	XL LXXXX LXXXX LXXXX LXXIII	XL LXXXX LXXXX LXXXX LXXIV	XL LXXXX LXXXX LXXXX LXXV	XL LXXXX LXXXX LXXXX LXXVI	XL LXXXX LXXXX LXXXX LXXVII	XL LXXXX LXXXX LXXXX LXXVIII	XL LXXXX LXXXX LXXXX LXXIX	XL LXXXX LXXXX LXXXX LXXX	XL LXXXX LXXXX LXXXX LXXXI	XL LXXXX LXXXX LXXXX LXXXII	XL LXXXX LXXXX LXXXX LXXXIII	XL LXXXX LXXXX LXXXX LXXXIV	XL LXXXX LXXXX LXXXX LXXXV	XL LXXXX LXXXX LXXXX LXXXVI	XL LXXXX LXXXX LXXXX LXXXVII	XL LXXXX LXXXX LXXXX LXXXVIII	XL LXXXX LXXXX LXXXX LXXXIX	XL LXXXX LXXXX LXXXX LXXXX	XL LXXXX LXXXX LXXXX LXXXX I	XL LXXXX LXXXX LXXXX LXXXX II	XL LXXXX LXXXX LXXXX LXXXX III	XL LXXXX LXXXX LXXXX LXXXX IV	XL LXXXX LXXXX LXXXX LXXXX V	XL LXXXX LXXXX LXXXX LXXXX VI	XL LXXXX LXXXX LXXXX LXXXX VII	XL LXXXX LXXXX LXXXX LXXXX VIII	XL LXXXX LXXXX LXXXX LXXXX IX	XL LXXXX LXXXX LXXXX LXXXX X	XL LXXXX LXXXX LXXXX LXXXX XI	XL LXXXX LXXXX LXXXX LXXXX XII	XL LXXXX LXXXX LXXXX LXXXX XIII	XL LXXXX LXXXX LXXXX LXXXX XIV	XL LXXXX LXXXX LXXXX LXXXX XV	XL LXXXX LXXXX LXXXX LXXXX XVI	XL LXXXX LXXXX LXXXX LXXXX XVII	XL LXXXX LXXXX LXXXX LXXXX XVIII	XL LXXXX LXXXX LXXXX LXXXX XIX	XL LXXXX LXXXX LXXXX LXXXX XX	XL LXXXX LXXXX LXXXX LXXXX XXI	XL LXXXX LXXXX LXXXX LXXXX XXII	XL LXXXX LXXXX LXXXX LXXXX XXIII	XL LXXXX LXXXX LXXXX LXXXX XXIV	XL LXXXX LXXXX LXXXX LXXXX XXV	XL LXXXX LXXXX LXXXX LXXXX XXVI	XL LXXXX LXXXX LXXXX LXXXX XXVII	XL LXXXX LXXXX LXXXX LXXXX XXVIII	XL LXXXX LXXXX LXXXX LXXXX XXIX	XL LXXXX LXXXX LXXXX LXXXX XXX	XL LXXXX LXXXX LXXXX LXXXX XXXI	XL LXXXX LXXXX LXXXX LXXXX XXXII	XL LXXXX LXXXX LXXXX LXXXX XXXIII	XL LXXXX LXXXX LXXXX LXXXX XXXIV	XL LXXXX LXXXX LXXXX LXXXX XXXV	XL LXXXX LXXXX LXXXX LXXXX XXXVI	XL LXXXX LXXXX LXXXX LXXXX XXXVII	XL LXXXX LXXXX LXXXX LXXXX XXXVIII	XL LXXXX LXXXX LXXXX LXXXX XXXIX	XL LXXXX LXXXX LXXXX LXXXX XL	XL LXXXX LXXXX LXXXX LXXXX XLI	XL LXXXX LXXXX LXXXX LXXXX XLII	XL LXXXX LXXXX LXXXX LXXXX XLIII	XL LXXXX LXXXX LXXXX LXXXX XLIV	XL LXXXX LXXXX LXXXX LXXXX XLV	XL LXXXX LXXXX LXXXX LXXXX XLVI	XL LXXXX LXXXX LXXXX LXXXX XLVII	XL LXXXX LXXXX LXXXX LXXXX XLVIII	XL LXXXX LXXXX LXXXX LXXXX XLIX	XL LXXXX LXXXX LXXXX LXXXX L	XL LXXXX LXXXX LXXXX LXXXX LI	XL LXXXX LXXXX LXXXX LXXXX LII	XL LXXXX LXXXX LXXXX LXXXX LIII	XL LXXXX LXXXX LXXXX LXXXX LIV	XL LXXXX LXXXX LXXXX LXXXX LV	XL LXXXX LXXXX LXXXX LXXXX LVI	XL LXXXX LXXXX LXXXX LXXXX LVII	XL LXXXX LXXXX LXXXX LXXXX LVIII	XL LXXXX LXXXX LXXXX LXXXX LVIX	XL LXXXX LXXXX LXXXX LXXXX LX	XL LXXXX LXXXX LXXXX LXXXX LXI	XL LXXXX LXXXX LXXXX LXXXX LXII	XL LXXXX LXXXX LXXXX LXXXX LXIII	XL LXXXX LXXXX LXXXX LXXXX LXIV	XL LXXXX LXXXX LXXXX LXXXX LXV	XL LXXXX LXXXX LXXXX LXXXX LXVI	XL LXXXX LXXXX LXXXX LXXXX LXVII	XL LXXXX LXXXX LXXXX LXXXX LXVIII	XL LXXXX LXXXX LXXXX LXXXX LXIX	XL LXXXX LXXXX LXXXX LXXXX LXX	XL LXXXX LXXXX LXXXX LXXXX LXXI	XL LXXXX LXXXX LXXXX LXXXX LXXII	XL LXXXX LXXXX LXXXX LXXXX LXXIII	XL LXXXX LXXXX LXXXX LXXXX LXXIV	XL LXXXX LXXXX LXXXX LXXXX LXXV	XL LXXXX LXXXX LXXXX LXXXX LXXVI	XL LXXXX LXXXX LXXXX LXXXX LXXVII	XL LXXXX LXXXX LXXXX LXXXX LXXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXIX	XL LXXXX LXXXX LXXXX LXXXX LXXX	XL LXXXX LXXXX LXXXX LXXXX LXXXI	XL LXXXX LXXXX LXXXX LXXXX LXXXII	XL LXXXX LXXXX LXXXX LXXXX LXXXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXV	XL LXXXX LXXXX LXXXX LXXXX LXXXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX I	XL LXXXX LXXXX LXXXX LXXXX LXXXX II	XL LXXXX LXXXX LXXXX LXXXX LXXXX III	XL LXXXX LXXXX LXXXX LXXXX LXXXX IV	XL LXXXX LXXXX LXXXX LXXXX LXXXX V	XL LXXXX LXXXX LXXXX LXXXX LXXXX VI	XL LXXXX LXXXX LXXXX LXXXX LXXXX VII	XL LXXXX LXXXX LXXXX LXXXX LXXXX VIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX IX	XL LXXXX LXXXX LXXXX LXXXX LXXXX X	XL LXXXX LXXXX LXXXX LXXXX LXXXX XI	XL LXXXX LXXXX LXXXX LXXXX LXXXX XII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX XV	XL LXXXX LXXXX LXXXX LXXXX LXXXX XVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX XVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX XX	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XXXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX XL	XL LXXXX LXXXX LXXXX LXXXX LXXXX XLI	XL LXXXX LXXXX LXXXX LXXXX LXXXX XLII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XLIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XLIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX XLV	XL LXXXX LXXXX LXXXX LXXXX LXXXX XLVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX XLVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XLVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX XLIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX L	XL LXXXX LXXXX LXXXX LXXXX LXXXX LI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LVIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX I	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX II	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX III	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX IV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX V	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX VI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX VII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX VIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX IX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX X	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XL	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX L	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LVIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX I	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX II	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX III	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX IV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX V	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX VI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX VII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX VIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX IX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX X	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XL	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX L	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LVIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX I	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX II	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX III	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX IV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX V	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX VI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX VII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX VIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX IX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX X	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XXXIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XL	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX XLIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX L	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LVI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LVII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LVIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LVIX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LX	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXI	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXIII	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXIV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXV	XL LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX LXXXX
----	------	-------	--------	------	-----	------	-------	--------	-------	------	-------	--------	---------	-------	----	------	-------	--------	-------	------	-------	--------	---------	-------	------	-------	--------	---------	--------	-------	--------	---------	----------	--------	-------	--------	---------	----------	---------	--------	---------	----------	-----------	---------	--------	---------	----------	-----------	----------	---------	----------	-----------	------------	----------	-------	--------	---------	----------	---------	--------	---------	----------	-----------	---------	------	-------	--------	---------	--------	-------	--------	---------	----------	---------	-------	--------	---------	----------	---------	--------	---------	----------	-----------	---------	--------	---------	----------	-----------	----------	---------	----------	-----------	------------	----------	---------	----------	-----------	------------	-----------	----------	-----------	------------	-------------	-----------	----------	------------	-------------	--------------	-------------	------------	-------------	--------------	---------------	-------------	------------	-------------	--------------	---------------	--------------	-------------	--------------	---------------	----------------	--------------	-------------	--------------	---------------	----------------	---------------	--------------	---------------	----------------	-----------------	---------------	--------------	---------------	----------------	-----------------	----------------	---------------	----------------	-----------------	------------------	----------------	-------------	--------------	---------------	----------------	---------------	--------------	---------------	----------------	-----------------	---------------	------------	-------------	--------------	---------------	--------------	-------------	--------------	---------------	----------------	---------------	-------------	--------------	---------------	----------------	---------------	--------------	---------------	----------------	-----------------	---------------	--------------	---------------	----------------	-----------------	----------------	---------------	----------------	-----------------	------------------	----------------	---------------	----------------	-----------------	------------------	-----------------	----------------	-----------------	------------------	-------------------	-----------------	----------------	------------------	-------------------	--------------------	-------------------	------------------	-------------------	--------------------	---------------------	-------------------	------------------	-------------------	--------------------	---------------------	--------------------	-------------------	--------------------	---------------------	----------------------	--------------------	-------------------	--------------------	---------------------	----------------------	---------------------	--------------------	---------------------	----------------------	-----------------------	---------------------	--------------------	---------------------	----------------------	-----------------------	----------------------	---------------------	----------------------	-----------------------	------------------------	----------------------	-------------------	--------------------	---------------------	----------------------	---------------------	--------------------	---------------------	----------------------	-----------------------	---------------------	------------------	-------------------	--------------------	---------------------	--------------------	-------------------	--------------------	---------------------	----------------------	---------------------	-------------------	--------------------	---------------------	----------------------	---------------------	--------------------	---------------------	----------------------	-----------------------	---------------------	--------------------	---------------------	----------------------	-----------------------	----------------------	---------------------	----------------------	-----------------------	------------------------	----------------------	---------------------	----------------------	-----------------------	------------------------	-----------------------	----------------------	-----------------------	------------------------	-------------------------	-----------------------	----------------------	------------------------	-------------------------	--------------------------	-------------------------	------------------------	-------------------------	--------------------------	---------------------------	-------------------------	------------------------	-------------------------	--------------------------	---------------------------	--------------------------	-------------------------	--------------------------	---------------------------	----------------------------	--------------------------	-------------------------	--------------------------	---------------------------	----------------------------	---------------------------	--------------------------	---------------------------	----------------------------	-----------------------------	---------------------------	--------------------------	---------------------------	----------------------------	-----------------------------	----------------------------	---------------------------	----------------------------	-----------------------------	------------------------------	----------------------------	-------------------------	--------------------------	---------------------------	----------------------------	---------------------------	--------------------------	---------------------------	----------------------------	-----------------------------	---------------------------	------------------------	-------------------------	--------------------------	---------------------------	--------------------------	-------------------------	--------------------------	---------------------------	----------------------------	---------------------------	-------------------------	--------------------------	---------------------------	----------------------------	---------------------------	--------------------------	---------------------------	----------------------------	-----------------------------	---------------------------	--------------------------	---------------------------	----------------------------	-----------------------------	----------------------------	---------------------------	----------------------------	-----------------------------	------------------------------	----------------------------	---------------------------	----------------------------	-----------------------------	------------------------------	-----------------------------	----------------------------	-----------------------------	------------------------------	-------------------------------	-----------------------------	----------------------------	------------------------------	-------------------------------	--------------------------------	-------------------------------	------------------------------	-------------------------------	--------------------------------	---------------------------------	-------------------------------	------------------------------	-------------------------------	--------------------------------	---------------------------------	--------------------------------	-------------------------------	--------------------------------	---------------------------------	----------------------------------	--------------------------------	-------------------------------	--------------------------------	---------------------------------	----------------------------------	---------------------------------	--------------------------------	---------------------------------	----------------------------------	-----------------------------------	---------------------------------	--------------------------------	---------------------------------	----------------------------------	-----------------------------------	----------------------------------	---------------------------------	----------------------------------	-----------------------------------	------------------------------------	----------------------------------	-------------------------------	--------------------------------	---------------------------------	----------------------------------	---------------------------------	--------------------------------	---------------------------------	----------------------------------	-----------------------------------	---------------------------------	------------------------------	-------------------------------	--------------------------------	---------------------------------	--------------------------------	-------------------------------	--------------------------------	---------------------------------	----------------------------------	---------------------------------	-------------------------------	--------------------------------	---------------------------------	----------------------------------	---------------------------------	--------------------------------	---------------------------------	----------------------------------	-----------------------------------	---------------------------------	--------------------------------	---------------------------------	----------------------------------	-----------------------------------	----------------------------------	---------------------------------	----------------------------------	-----------------------------------	------------------------------------	----------------------------------	---------------------------------	----------------------------------	-----------------------------------	------------------------------------	-----------------------------------	----------------------------------	-----------------------------------	------------------------------------	-------------------------------------	-----------------------------------	----------------------------------	------------------------------------	-------------------------------------	--------------------------------------	-------------------------------------	------------------------------------	-------------------------------------	--------------------------------------	---------------------------------------	-------------------------------------	------------------------------------	-------------------------------------	--------------------------------------	---------------------------------------	--------------------------------------	-------------------------------------	--------------------------------------	---------------------------------------	--	--------------------------------------	-------------------------------------	--------------------------------------	---------------------------------------	--	---------------------------------------	--------------------------------------	---------------------------------------	--	---	---------------------------------------	--------------------------------------	---------------------------------------	--	---	--	---------------------------------------	--	---	--	--	-------------------------------------	--------------------------------------	---------------------------------------	--	---------------------------------------	--------------------------------------	---------------------------------------	--	---	---------------------------------------	------------------------------------	-------------------------------------	--------------------------------------	---------------------------------------	--------------------------------------	-------------------------------------	--------------------------------------	---------------------------------------	--	---------------------------------------	-------------------------------------	--------------------------------------	---------------------------------------	--	---------------------------------------	--------------------------------------	---------------------------------------	--	---	---------------------------------------	--------------------------------------	---------------------------------------	--	---	--	---------------------------------------	--	---	--	--	---------------------------------------	--	---	--	---	--	---	--	---	---	--	--	---	--	---	--	---	--	---	---	--	---	--	---	--	---	--	---	--	--	---	--	---	--	---	--	---	--	---	---	--	---	--	---	--	---	--	---	--	--	---	--	---	--	---	--	---	--	---	---	--	---	--	---	--	---	--	---	--	---	---	--	---	--	---	--	---	--	---	---	--	---	--	---	--	---	--	---	--	--	---	--	---	--	---	--	---	--	---	---	--	--	---	--	---	--	---	--	---	---	--	---	--	---	--	---	--	---	--	--	---	--	---	--	---	--	---	--	---	---	--	---	--	---	--	---	--	---	--	--	---	--	---	--	---	--	---	--	---	---	--	---	--	---	--	---	--	---	--	---	---	--	---	--	---	--	---	--	---	---	--	---	--	---	--	---	--	---	--	--	---	--	---	--	---	--	---	--	---	---	--	--	---	--	---	--	---	--	---	---	--	---	--	---	--	---	--	---	--	--	---	--	---	--	---	--	---	--	---	---	--	---	--	---	--	---	--	---	--	--	---	--	---	--	---	--	---	--	---	---	--	---	--	---	--	---	--	---	--	---	---	--	---	--	---	--	--

VIII. Typhus abdominalis

[illegible]

Column 2	Before fermentation	After fermentation
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
29	29	29
30	30	30
31	31	31
32	32	32
33	33	33
34	34	34
35	35	35
36	36	36
37	37	37
38	38	38
39	39	39
40	40	40
41	41	41
42	42	42
43	43	43
44	44	44
45	45	45
46	46	46
47	47	47
48	48	48
49	49	49
50	50	50
51	51	51
52	52	52
53	53	53
54	54	54
55	55	55
56	56	56
57	57	57
58	58	58
59	59	59
60	60	60
61	61	61
62	62	62
63	63	63
64	64	64
65	65	65
66	66	66
67	67	67
68	68	68
69	69	69
70	70	70
71	71	71
72	72	72
73	73	73
74	74	74
75	75	75
76	76	76
77	77	77
78	78	78
79	79	79
80	80	80
81	81	81
82	82	82
83	83	83
84	84	84
85	85	85
86	86	86
87	87	87
88	88	88
89	89	89
90	90	90
91	91	91
92	92	92
93	93	93
94	94	94
95	95	95
96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

Column 1
Fermented diabetes mellitus
lobular pneumonia
The same, fermented
Erysipelas
Typhus abdominalis, etc.

Before I pass on to the concluding observations, I will first of all answer the question encountered in experiments 17-44 [See Note] of whether less than 10 g of phosphoric acid are enough, as in urine originating from kidney diseases, to convert the urea present into ammonium phosphate.

[Note]: I have also assimilated into the Table experiments 39-44 which were first discussed on page 234.

First I will give the Table on the results concerning this, obtained from the observations.

(See Table VI below.)

These observations show that 3 g of tribasic phosphoric acid are enough in urine from liver diseases, urine from anemia, etc., to convert the urea contained in 5 cc urine into ammonium phosphate using Schöndorff's method.

Table VI.

The Amount of Normal Sulphuric Acid in Cubic Centimeters
Used Each Time by 20 cc Filtrate

Using:

	Number of Experiments		Average			Average			Average		
			I	II	Average	I	II	Average	I	II	Average
Erysipelas	34.	10 g Tribasic Phosphoric Acid	30.1	—	30.1	—	—	—	—	—	—
Typhus	35.	10 g	24.8	24.8	24.8	from 5 g	24.6	24.7	24.65	from 3 g	24.4
	36.	10 g	14.3	14.3	14.3	5 g	14.3	14.3	14.3	3 g	14.3
	37.	10 g	22.8	22.8	22.8	5 g	22.8	22.8	22.8	3 g	22.4
	38.	10 g	22.9	22.9	22.9	5 g	22.9	22.8	22.85	3 g	22.1

The urine of diabetics and each case in which the urine contained sugar behaved differently as I already explained on page 206. As the Table shows, 10, even 15 g were insufficient in this case, and 20 g of phosphoric acid had to be used. These results, however, are not reliable and it is recommended that the urine be fermented before carrying out the urea determination (see page 210). Five or even three grams of phosphoric acid were sufficient to convert all the urea into ammonium phosphate in urine which contained only small amounts of sugar (see experiments 31 and 32).

The urine of the typhus victim behaved somewhat differently from that of the former group. Here, 5 g phosphoric acid were not enough, as Table VI and experiments 35-38 show, to convert all the urea into ammonium phosphate if the content were high (case 35).

If we summarize the material on page 189 and in Table I and that discussed here, we find that in the larger number of cases, by far, 5 g, even 3 g of phosphoric acid sufficed to produce accurate values using the Schön-dorff method of urea determination. In the future, 5 g phosphoric acid will suffice in carrying out the procedure. In the case of urine from feverish people, 10 g are recommended; urine from diabetics should be previously fermented, or a much larger quantity, 20 g, of crystalline tribasic phosphoric acid should be used.

Here I would like to meet the objection (see page 191) that the quantities of amino acids found correspond only to the experimental error. If we exclude experiment 30 on the grounds explained on page 216, this error in the 21 experiments fluctuates between

-0.4-6.4%) of the total nitrogen (see pages 190 and 191).
+0.28-3.7%)

For this reason, I am compiling here part of Table III and Table VII and refer you to the details on page 191. Note that I also assimilated into this Table experiments 39-44 which are still to be discussed.

Table VII.

Experiment	Twenty cc Filtrate Used		Difference in cc
	in the Kjeldahl method	in the Schön-dorff method	
	cc by the acid present	cc	
17	11.5	11.25	0.35
18	7.8	7.7	0.1
19	9.5	9.3	0.2
20	12.65	12.15	0.5
21	9.7	9.45	0.25
27	8.2	7.9	0.3
29	12.05	11.6	0.45
30	3.2	2.8	0.4
31	12.75	12.2	0.55
32	11.6	12.05	negative
33	11.95	11.35	0.6
34	30.4	30.1	0.3
35	25.55	24.8	0.75
36	14.6	14.3	0.3
37	23.3	22.8	0.5
38	23.5	22.9	0.6
39	15.55	15.2	0.25

Table VII. (Continued)

Experiment	Twenty cc Filtrate Used,		Difference in cc
	in the Kjeldahl method cc	in the Schöndorff method cc by the acid present	
40	16.2	16.05	0.05
41	14.15	13.7	4.45
42	12.2	11.98	0.27
43	11.7	11.45	0.25
44	15.8	15.7	0.1

Only those cases have been included in the Table in which the differences presented have resulted from true behavior of urine. Those observations, for example those on unfermented diabetic urine, in which the results and therefore the differences were inaccurate, were not presented. From 22 experiments it is clear, since the difference always lies between 0.1-0.75, that besides the urea there were one or more materials also present which were not precipitated by phosphotungstic acid. Thus it is demonstrated that small quantities of amino acids or materials like them are found in the urine and can be detected by means of the selected preceding method.

There can still be doubt of whether this method can generally detect special amino acids. For this purpose I determined the distribution of nitrogen in a mild case of rheumatism and administered sodium benzoate.

From a clinical view, these studies have shown:

1. Of the nitrogen from the urine of the sick that was not precipitable by phosphotungstic acid, 95.85-98.36% existed as urea.
2. Of the nitrogen-containing materials precipitable by phosphotungstic acid, 5.16-8.51% existed as purine materials and ammonia compounds.
3. Of the total nitrogen in urine, 83.93-91.07% originated from urea.
4. Amino acid nitrogen accounted for 1.52-3.61% of the total nitrogen.
5. The amount of total nitrogen, multiplied by two, gives the amount of urea in albumen-free urine with sufficient accuracy for clinical investigations.
6. According to the relations found in pathological urine and from the two experiments on normal humans (experiments 47 and 48), about 1.5-3% at the most of the total nitrogen should consist of amino acid nitrogen; this quantity can be increased by certain nourishment, for example the introduction of materials containing benzoic acid (see experiments 39-44).

7. In liver diseases, typhus abdominalis, diabetes mellitus, even in individual cases of Basedow illness, the elimination of amino acid nitrogen increased. This can amount to 0.64 g in the daily quantity of urine during diabetes, 0.50 g in typhus.